REMOTE TRANSMITTER/RECEIVER (RTR) SHELTER
FOR THE RTR-WEST LOCATION
AT THE
BOISE AIR TERMINAL, BOISE, IDAHO

GENERAL SPECIFICATION

TABLE OF CONTENTS

PART 1 GENERAL SPECIFICATION

1.1 STATEMENT OF WORK

This specification together with referenced specifications, standards and drawings, describe requirements for work associated with design, fabrication, and sequential delivery of one RTR shelter for Boise Air Terminal, Boise, Idaho.

Work includes (but is not limited to):

1. Design and fabrication of one steel shelter (24' x 32') per requirements listed below. This shelter shall be identified as "RTR-WEST".
2. Design one foundation at near grade level for the steel shelter per requirements listed below and FAA provided Geotechnical Engineering Report.
3. Deliver, off-load, and reassemble shelter building onto foundation prepared by separate Contractor. Show separate cost for delivering, off-loading, and assembling.
4. Anticipated delivery RTR-WEST shelter; late-September/mid-October 2009.

Note: Fabrication, GFE equipment installation, specified limited electrical testing shall be accomplished indoors at the Contractor's facilities. Contractor shall allow access to FAA inspection personnel during fabrication and equipment installation and specified testing.

Contractor shall furnish all labor, materials (except Government furnished equipment), services, equipment, insurance, bonds, licenses, permits, and fees in accordance with applicable federal, state or local regulatory requirements to complete the specified work. Any miscellaneous labor, equipment or materials not specifically detailed or specified, but required to complete the project, shall be provided as an integral part of the work.

THIS IS A <u>DESIGN/BUILD</u> PROJECT. THE SALIENT FEATURES AND MINIMUM REQUIREMENTS ARE LISTED BELOW. THE ATTACHED DRAWINGS ARE PROVIDED TO GIVE CONTRACTOR A CONCEPTUAL IDEA OF THE TYPICAL RTR SHELTER. THE CONTRACTOR IS ENCOURAGED TO PROVIDE A NEW AND UNIQUE PROPOSAL THAT WOULD BEST BENEFIT THE FAA.

1.1.1 DESIGN AND FABRICATION

Salient Features and Minimum Requirements:

Shelter shall be steel, factory assembled, self-contained and portable. All necessary material not otherwise indicated by to be Government furnished, shall be provided by the shelter manufacturing Contractor.

All work shall be in compliance with the FAA Specification FAA-C-1217f, FAA Standard FAA-STD-019e and the National Electric Code.

DESIGN CRITERIA

1. Shelter building shall be designed and fabricated to prevent entry of rain, snow wind-blown dust, rodents and moisture. Louvers shall be tight sealed when closed.

2. Dimensions:

    i. RTR – WEST: 24' wide x 32' long interior dimensions.

3. Roof slope shall be ¼ to ½ inch per foot. Provide a minimum 1-foot eave around shelter perimeter.

4. Ceiling clear height 9' 6".

5. Floor design load 250 psf. Special floor skid design required for concentrated load at RTR.

6. Roof design live load: 85 psf live load.

7. Wind design requirement 125 mph sustained wind.

8. Insulation:

    i. Walls and floor = R20.
    ii. Roof = R33.

9. Materials:

    i. Exterior walls – 12 gauge paint quality steel.
    ii. Interior walls – shall accommodated 400 lbs. per linear ft and be finished with 3/4" Fire Rated Plywood (A-D-INT-APA).
    iii. Ceiling – 5/8" painted plywood, Veneer Grade B or better.
    iv. Roof shall have waterproofing system approved before application.
    v. Floor skid shall be hot dipped galvanized.

10. Provide welded and threaded couplings at all building penetrations.

11. Estimated weight of finished shelter with RTR and components installed is 40,000 lbs.

PAINT REQUIREMENTS

1. Exterior shall be Sherwin-Williams Bronze (SW4007, flat), as approved. 3 mil epoxy primer and 15 mil electromeric liquid coating.

2. Interior walls: Sherwin Williams Olympus White (SW 6253, flat), as approved. Interior primer and latex semi-gloss with light textured finish.

3. Interior door panel and interior door trim. ANSI 70 Gray, as approved finish over factory primer. Submit sample or vendor data.

4. Piping: Gray color for exterior vents, as approved. Epoxy metal primer with aliphatic urethane coating.

DOORS

1. Door shall be steel, weather tight, with a lever type handle. Provide Best deadbolt lock with Best construction core.

2. Provide hydraulic door closer with prop open mechanism.

3. Provide door stop

4. Doors and door frames shall conform to Level III, extra heavy-duty, Style 3, in accordance with SDI Standards.

5. Doors shall be 1 ¾ inch thick, full flush, seamless.

6. Double doors shall have minimum width of 72 inches and a height of 84 inches.

7. Exterior doors shall have a 12" high kick plate, as approved. Doors shall have automatic door closures (with provisions for doors to be held open).

8. Provide a door canopy (with sealed drip edge) over each door, as approved.

FINISH HARDWARE

1. Butt Hinges: Hinges shall conform to ANSI A 156.1 and ANSI A156.7 (with non-removable pins). Grade 1, Full mortise, Extra Heavy Weight, 3 Knuckle, US26D Finish (not a stainless steel hinge). Provide four hinges per door.

2. Lockset: Heavy Duty Cylindrical Lock, 93K-7AB15-L-S3-626, manufactured by Best Lock Corporation (no substitutes will be accepted). Provide four (4) construction core master keys and one (1) construction core control key. Final keying to be completed by Government at the site.

3. Flush bolts and strike: Conform to FF-H-111, Type 1045 and Type 1048 respectively.

ELECTRIC PANELS AND DISCONNECT SWITCHES

1. Provide and install a main distribution panel (Square D NQOD Type) with 200 amp main breaker and appropriately-sized bolt on breakers for all wired circuits.

2. All Disconnect Switches shall be Square D, heavy duty or equal.

3. Panel enclosures shall have hinged door in door front.

4. Provide and install all necessary outlets (electrical and telephone), receptacles, switches, junction boxes, terminal boxes, smoke detectors, and door alarms (intrusion switch's), as required. Use clamp backs to provide space between the conduits and the mounting surfaces (walls).

5. Provide and install exterior GFI outlets w/ weatherproof lockable enclosure (Hoffman #A-8R86HCR) on each side of the building as approved. The bottom of each GFI enclosure shall have a 2" sealable opening, as approved.

6. Provide one (1) and install Fused Disconnect Switch w/150A Fuses.

7. Provide one (1) and install 200A, Pin and Sleeve Receptacle with Plug, 4 Pole, Crouse-Hinds #AREA204126 w/Plug, AP204512. This shall be rated for 200 amps at 208 Volts.

8. Provide spare fuses for all disconnect switches.

9. Provide and install a 30" x 30"x 12" hinged cover pull box (Hoffman # A-30R3012HCR) on the exterior of building, adjacent to the high voltage output cabinet.

10. Provide and install three (3) NEMA 4X Bulkhead Boxes, 36"X42"X8"

11. Provide and install one meter base located on the northeast corner of the shelter wall, CAT #MILBANK 124TB-RP.

TRANSIENT VOLTAGE SURGE SUPPRESSION

1. Provide and install surge arrestor for the main service disconnect:
   LPC model 20208-7.

2. Provide and install surge suppressor for distribution panel:
   LPC model 2020-3U-G.

ELECTRICAL BONDING AND GROUNDING

1. Run grounding electrode conductors from the Service Entrance Disconnect, to wall penetrations as approved. Leave at least 20' of slack at the walls (to be connected to the shelter counterpoise by the field contractor).

2. Provide and install a "MAIN" ground plate in the RTR Equipment room and a "SUPPLEMENTAL MAIN" ground plate on the opposite end of the Equipment room. The two main ground plates shall be interconnected by a #4/0 insulated conductor marked green with an orange tracer. Secure conductors to the wall and ceiling using Unistrut one hole clamps (Unistrut P2010, or as approved) on sections of P4000 Unistrut as approved. Connections to the ground plates shall be made with stainless steel bolts, flat washers, disc spring washers, and nuts (do not install washer between bonded members). For the Main and Supplemental Main ground plates, supply a 20ft long 500 kcmil cable with a two stud hole type compression lug, as approved.

3. Provide and install rooftop Halo Ring, air terminals, and four down conductors (per FAA-STD-019e). Leave at least 10'0" of down conductor slack at the ends (to be connected to the shelter EES by the field contractor).

4. Provide and install ground lugs (to accommodate #4/0) on shelter skids at all four corners.

5. Provide and install Surge Protection for the Service Entrance Disconnect and the RTR Equipment Room distribution panel.

6. Facility surge protective device for the main service disconnect shall be LPC #20206-7.

7. Surge protective device for the RTR equipment room distribution panel shall be LPC #2020-5U-G

LIGHTING

1. Provide and install interior fluorescent lighting with RFI Filters mounted with 1-5/8" offset from the ceiling. Install lighting parallel to and between Cable Trays.

2. Provide and install interior emergency exit lighting above the shelter door (Grainger #4PH07).

3. Provide and install one (1), exterior 35W 120V High Pressure Sodium light on exterior wall near door. Light shall be controlled by switch only and have no photoelectric-cell.

RECEPTACLES, SWITCHES AND JUNCTION BOXES

1. Provide and install necessary receptacles, switches, smoke detector, junction boxes and terminal boxes. Use clamp backs to provide space between conduits and mounting surface (wall or ceiling).

CABLE TRAY

1. Provide and install Interior Cable Tray. Cable Tray shall be mounted on a Trapeze support a minimum of 8'- 1 3/8" AFF. The tray shall be Aluminum tray, 12" wide with a 9" rung spacing and 4 inch side rail. The trapeze supports shall be installed at a spacing of 10'0" on center wide enough for the tray and two 4" wire ways. One wire way will contain AC circuits and the other shall contain DC circuits. The cable tray supports shall provide seismic support for the trays and wire ways to the walls of the building.

HEATING AND AIR CONDITIONING / HVAC

1. HVAC for the RTR shelter shall meet a 65 Deg. F Winter and 78/75 Deg. F Summer temperature requirement. Proposed equipment in Shelter has low heat output. Personnel Occupancy is not anticipated other than Repair work.

2. Provided and install for each shelter:

   i. Qty Two (2) Wall Mounted Air Conditioner with heaters. Units shall be equipped with Economizers. Air Conditioning units shall be connected to a Lead/Lag thermostat.

   ii. Qty One (1) 1,000 CFM over temperature Fan set at 85F. Fan shall have a hood and use back draft dampers.

   iii. Qty One (1) Unit Heater 5 kW

   iv. Provided emergency power at facility is a DC Buss System. The Over Temperature shall be connected to the DC Buss System for operation in extended outages.

   v. One (1) thermostat for HVAC control shall be part of this ventilation control panel.

MISCELLANEOUS ITEMS

1. Provide and install galvanized steel grate step platforms for shelter. Step platforms shall be 48" wide x 48" deep x 7" high.

2. Provide and install six 3/4"slotted galvanized steel mounting plates to security shelter skid to foundation.

3. Provide and extra touch up paint (with mixing instructions if applicable) and 4 each small mixing containers, stir sticks, and 4 each touch up paint brushes (1"), as approved.

4. Provide and install miscellaneous furnishings, as approved. Items include (but are not limited to):

   * 12 ft wide shelving for the RTR room (braced to wall), 1 each (Grainger #7E510).
   * Heavy duty Safety Storage Cabinet for the Office Room (Grainger #6YG11 & #2W427).
   * 72"w x 30"d Work Bench for Office Room:
     - 3 Drawer/1 Panel Leg, with Butcher Block Maple (Grainger #7D080).
     - Electronic Riser (Grainger #5W675).
     - Back & End Stops (Grainger #5W677).
     - Electronic Riser Wiring Kit (Grainger #4TW73).

- Chair for Work Desk, as approved.

* Two each, drafting style chairs for the RTR Room. Grainger #4KH38.
* Interior Emergency Lights, 1 each (Grainger #4PH07)
* Fire extinguisher, 2 each (Grainger #4T889). Dry Chemical
* Heavy Duty Service Cart (Grainger #5M716).
* Step stool (Grainger #5M656).
* Emergency Eyewash Station, 1 each (Grainger #1KW78).
* Angle Broom, 1 each (Grainger 3BE88).
* Metal Dust Pan, 1 each (Grainger #5W639).
* 28 1/8 qt Polyethylene Wastebasket, 1 each (Grainger #5W001).
* Disposable Wipes, 1 each (Grainger #2TU43).
* Bottle (32 oz) each of Commercial Grade Windex® and 409®, 1 each.
* 12/24 hour clock, Sportys #8399A (available at www.sportys.com), 1 each.

IDENTIFICATION LABELS

1. Provide plastic laminate labels for all distribution panel enclosures, safety switches, junction boxes per FAA-C-1217f. Labels shall be black with white engraved text. Font shall be all capital letters 3/8" tall. Apply with double stick foam tape.

2. Provide and mount identification signs on the building doors as approved (i.e., FAA RTR-West).

3. Install "FAA Warning" signs on the outside the exterior door as approved. The "FAA Warning" sign will be government furnished.

1.1.2 DELIVERY AND OFF-LOADING

1. Anticipated delivery RTR-WEST shelter; mid - October 2009.

2. Fabrication Contractor shall be responsible to transport, deliver and offload the shelter at the Boise Air Terminal Airport, RTR sites. Contractor shall coordinate shelter delivery time and date with FAA.

3. The floor of the delivered shelter shall be covered and protected, as approved. Loose material inside the shelter (desk, chairs, cabinets, etc), shall be secured to prevent movement during shipment. Any dirt or debris that accumulates on the shelter during shipment and delivery shall be cleaned off.

4. Fabrication Contractor shall set shelter on concrete foundations provided by FAA. Contractor shall secure shelter to foundation with galvanized anchor bolts, nuts and mounting plates.

5. Contractor shall reattach all external metal rain hoods at the delivery site. Contractor shall secure the metal step platform to the existing concrete entry slab.

6. FAA will provide an escort for the truck and crane delivering the shelter. FAA will bond shelter skids to earth electrode system.

1.2 REFERENCES

1. FAA-C-1217f Electrical Work, Interior

2. FAA-STD-019e Lightning and Surge Protection, Grounding, Bonding and Shielding Requirements for Facilities and Electronic Equipment

3. NEC National Electric Code (2008)

1.3 DRAWINGS

Drawings provided show the general RTR shelter configurations, locations, and dimensions. Drawings attached as separate PDF files.

RTR-WEST SHELTER

BOI – D – RTR WEST – C001; SITE PLAN & VICINITY MAP
BOI – D – RTR WEST – A001; PLANS AND ELEVATIONS

1.4 SUBMITTALS

1.4.1 BUILDING DESIGN AND DRAWINGS

1. Contractor shall prepare shop drawings for RTR shelter and step platforms.

2. Contractor shop drawings shall include wall elevations.

3. Contractor shall submit shop drawings to FAA for review and approval prior to fabrication.

4. Text documents shall be provided in hardcopy and in portable document MS Word (*.doc) or (*.PDF) format.

5. Building design and foundation drawings shall be provided in hardcopy and electronically in Micro Station Version 8 format (*.dgn). Drawings must comply with FAA drawing standard FAA-STD-002f. The sheet size for all drawings must be ANSI-D (22" x 34"), and each drawing must incorporate the FAA title block that will be provided.

1.4.2 MATERIAL

1. The contractor shall submit catalog data, cut-sheets, samples, and any other required information to the FAA Project Engineer for approval of the following:

i. Contractor furnished electrical components including enclosures, cables, connectors, and conduits.

ii. HVAC components.

iii. Contractor furnished hardware.

2. Electrical Distribution Panel.

i. Circuit breakers

ii. Disconnect switches

iii. Electrical Enclosures

iv. Label text

1.4.3 TESTING

1. Perform the following tests and provide written results or verification to FAA:

i. Continuity verification to insure proper termination.

ii. Insulation resistance tests (phase to phase, phase to ground for all branch circuit wire before connection. One minute text with 500 VDC insulation tester. 30 Megaohm resistance required. Provide table of test results. (FAA-C-1217f – 5.3.4)

2. After shelter is in place, and provided with service entrance conductors, the FAA will conduct an operating test. FAA will advise fabrication Contractor if any shelter components or circuits fail during this test. Fabrication Contractor shall repair or replace defective systems or components revealed at no additional cost.

PART 2 PRODUCTS

Reference in the drawings or specifications to a specific commercial product, process, service, trade name, trademark, manufacturer does not necessarily constitute or imply its endorsement, recommendation or favoring by the Federal Aviation Administration. Contractor may submit a request for substitution of a specified product, process or service. Such request shall be made through the submittal process.

2.1 GOVERNMENT FURNISHED DOCUMENTS

"GEOTECHNICAL ENGINEERING REPORT
Proposed Remote Transmitter/Receiver Shelter, Boise Air Terminal, Boise, Idaho, Terracon Project No. 62095017 dtd. April 24, 2009"
Note: Boring Information B-3 and B-4 apply.

2.2 CONTRACTOR FURNISHED MATERIAL

The contractor shall furnish all material that is required and not otherwise indicated to be Government furnished. Materials furnished by the contractor shall be new, the standard products of manufacturers regularly engaged in the production of such materials, and of the manufacturer's latest designs that comply with the specification requirements.

The list of contractor furnished material includes, but is not limited to:

- Surge Arrestor
- Main Disconnect
- Primary Power Panel
- Shelter Distribution Panel
- Power, control, and grounding cable
- Air terminals and down conductors
- Ground plates
- Electrical fittings, conduits, and components
- HVAC components and controls
- Labels for electrical components
- Metal stairs at Entryways

PART 3 EXECUTION

3.1 FABRICATION SCHEDULE

Submit shop drawings and submittals within 10 calendar days after contract award.

Complete fabrication of each shelter within 60 calendar days after FAA approves shop drawings and submittals.

3.2 AS-BUILT DRAWINGS

Provide as-built drawings within 14 calendar days of contract acceptance inspection.

3.3 INSTALLATION AND WORKMANSHIP

Perform work in accordance with the intent of the contract. Follow FAA standards reference. Conform to appropriate commercial standards for work involved. Use accepted industry practices.

Contractor shall be regularly engaged in fabrication of the shelter with existing plant facilities equipped for year round manufacturing.

Contractor shall be experienced in installing RTR's, wiring all components and associated equipment.

Contractor shall be capable and experienced in transporting shelter to active airports using specialized trucks, trailers and cranes.

Contractor shall use skilled personnel who have been regularly engaged in this type work. Where required by local regulations, personnel shall be properly licensed to perform categories of work involved. Electrical component installation, including conduit and conductors, terminations and splices shall be performed by a qualified electrician.

Contractor shall supervise the work to assure quality of construction and maintain work on schedule.

3.4 CONTRACT ACCEPTANCE INSPECTION

Prior to shipping the shelter to site, Contractor shall participate in Contract Acceptance Inspection. Contractor shall correct any deficient or defective components, systems or workmanship found as a result of this inspection.

3.5 GUARANTEE

Contractor fabricated shelter and Contractor work to install the RTR shelter shall be guaranteed against defects resulting from defective workmanship and material. Contractor is not responsible for guaranteeing Government furnished components unless, the Contractor installed work contributed to component failure.

All Contractor-provided components, systems and workmanship are guaranteed for one year commencing from the date of Contract Acceptance by the Contracting Officer.

PART 4 POINT OF CONTACTS

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